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a joint session of Section B and Section L, the former furnishing the program. Speakers will be Professors E. H. Hall, A. G. Webster, J. F. Woodhull, C. R. Mann and probably Presidents E. F. Nichols and N. H. Black.

The Engineering Section (D) of the American Association for the Advancement of Science will hold its meetings in Room 31, Engineering Building A, Trinity Place, Boston, on December 29 and 30. Professor G. F. Swain, retiring chairman of the section and vice-president of the association, will deliver his address at 2:30 p.m. on Wednesday, December 29, subject, "The Profession of Engineering and its relation to the American Association for the Advancement of Science." Other papers have been definitely promised as follows:

Professor A. L. Rotch: "The Relation of Wind to Aeronautics."

O. Chanute: "The Present Status of Aerial Navigation."

S. P. Ferguson: "Wind Pressure and Velocity."

A. J. Henry: "Shifting of Wind with Altitude."

A. M. Herring: "Aerodynamics."

Albert Zahm, Alexander Graham Bell and others will probably contribute papers or discussions on aeronautical subjects.

C. J. H. Woodbury: "The Development of the Modern Textile Mill."

J. F. Kelly: "Music Roll Cutters."

H. E. Wetherill: "Parallel Rules."

E. H. Berry: "The Photographic Lens as an Engineering Implement."

Other interesting papers, for which titles can not yet be announced, will be on the program. The dates and hour of presentation of each paper will be announced in the Official Program of the Association which will be obtainable at the office of the Permanent Secretary, Technology Union, Trinity Place, on Monday, December 27.

SCIENTIFIC NOTES AND NEWS

MR. WILLIAM H. HOLMES, chief of the Bureau of American Ethnology, will on January 1 sever his official connection with the bureau and resume his place as head curator

of anthropology in the U. S. National Museum, and in this connection will also become curator of the National Gallery of Art. Mr. F. W. Hodge will take charge of the Bureau of American Ethnology with the title ethnologist in charge.

It is proposed to add to the collection of portraits of deceased members of the American Philosophical Society that of Professor Simon Newcomb. The formal presentation of the portrait is expected to take place in connection with the annual meeting in April, 1910. The committee in charge is: C. L. Doolittle, chairman, E. C. Pickering, Ernest W. Brown, Ira Remsen and Charles D. Walcott.

DR. THEODORE W. RICHARDS, professor of chemistry at Harvard University, has been elected a corresponding member of the Paris Academy of Sciences.

DR. ALBRECHT PENCK, professor of geography at Berlin, has been elected a corresponding member of the Munich Academy of Sciences.

DR. W. WALDEYER, professor of anatomy at Berlin, has been elected an honorary member of the Anthropological Society of that city.

PROFESSOR A. C. SEWARD, F.R.S., professor of botany in the University of Cambridge, has been elected president of the Yorkshire Naturalists' Union.

THE Walsingham medal for 1909 has been awarded by Cambridge University to Mr. L. J. Wills, for his essay entitled "The Fossiliferous Lower Keuper Rocks of Worcestershire," and a second medal to Mr. H. H. Thomas, for his essay entitled "The Leaves of Calamites (*Calamocladus* section), with special reference to the conditions under which they grew."

THE La Caze prize (10,000 francs) of the Paris Academy of Sciences has been given to Dr. Delezenne, of the Pasteur Institute, for his collective works.

MR. THEODORE D. URBAHNS, of the Bureau of Entomology, has been employed as assistant in research field work by the division of en-

tology of the University of Minnesota Experiment Station.

MR. E. J. MCCAUSTLAND, professor of municipal engineering, University of Washington, has been appointed sanitary engineer to the State Board of Health.

DR. EJNAR HERTZSPRUNG, associate professor at Göttingen, has been elected observer in the Astrophysical Observatory at Potsdam.

It is proposed that a grant of £100 be made from the Worts Fund, Cambridge University, to Mr. J. Romanes, towards defraying the expense of a journey to Costa Rica with the object of studying the geology and geography of that country.

DR. CHARLES PEABODY, of Harvard University, recently made an archeological reconnaissance trip in Texas. The archeology of the mountainous region of the state, for some three hundred miles, was studied, and a fair collection of the stone implements secured for the Peabody Museum. The pictographs of the area were also investigated. During the summer, Dr. Peabody represented the museum at the Congrès Préhistorique at Beauvais, France, presenting a paper covering the results of his investigations in Texas.

MR. W. DAWSON JOHNSTON, librarian of Columbia University, is preparing for the United States Bureau of Education a report on special collections in libraries in the United States. It is planned to make the publication a record of all collections in public libraries which are of extraordinary value, either because of their completeness or because of the rarity of their contents. In order to collect the material for this report the Bureau of Education is sending circulars to all libraries which are thought to possess such collections.

A COURSE of lectures upon Abnormal Psychology will be given by Dr. Morton Prince, of Boston, at the University of California, from January to April, 1910.

THE Friday evening meetings of the Royal Institution, London, will commence on January 21, when Sir James Dewar will give a lecture on light reactions at low tempera-

tures. Succeeding lectures will probably be given by the Rev. Canon Beeching, Professor W. Bateson, Mr. C. E. S. Phillips, Professor H. H. Turner, Lord Rayleigh, Dr. C. Chree, Dr. H. Brereton Baker and Sir J. J. Thomson.

ON December 15 the name of Cyrus Hall McCormick was installed in the Illinois Farmers' Hall of Fame at the University of Illinois. A portrait of Mr. McCormick was unveiled by his granddaughter, Miss Muriel McCormick. Among the speakers were Governor Charles Deneen, President E. J. James and Mr. Cyrus Hall McCormick, the son of the inventor. The next name to be enrolled in this Hall of Fame is that of Jonathan B. Turner, the originator and promoter of the idea of a National Land Grant for agricultural colleges in the states.

PROFESSOR HILARY BAUERMAN, formerly of the Royal Artillery College, Woolwich, well known as a metallurgist and geologist, died on December 5, at the age of seventy-six years.

It is announced that the council of the University of Paris has passed a resolution to the effect that monuments intended to commemorate men who have brought distinction on the University of Paris since 1808 shall be erected in the church of the Sorbonne.

THE New York State Science Teachers Association will hold its fourteenth annual meeting at Syracuse, N. Y., on December 27, 28 and 29, in conjunction with the Associated Academic Principals and other educational bodies. The president of the association is Professor W. M. Smallwood, of Syracuse University.

THE week of December 6-11 was appointed by the International Commission for Scientific Aeronautics for the long series of observations in the upper air. The United States Weather Bureau was unable to make the ascensions of sounding balloons promised at Omaha, but three of these balloons were sent up by Professor A. L. Rotch, from Pittsfield, Mass., and two pilot balloons, for wind direction and velocity, from Blue Hill Observatory.

One of the sounding balloons, with good records of pressure and temperature, has already been recovered.

WE learn from the *London Times* that the British Natural History Museum will shortly be enriched by Lord Walsingham's gift of his unrivaled collection of Micro-Lepidoptera, which will be transferred from Merton Hall to Cromwell-road in the spring of the coming year. The collection which thus passes into the possession of the nation is by far the richest of the kind in the world. When examined by the museum specialist in 1901 it was officially reported to the trustees to contain over 200,000 specimens, in a condition of preservation which left nothing to be desired, and to include about nine tenths of the recorded species, besides a large quantity of unworked material. Since that date it has continually been added to, until now the number of specimens is about 260,000. It will add about 45,000 species of Micro-Lepidoptera to the national collection, which at present possesses only about 4,000 species of these small insects. In addition, Lord Walsingham is presenting to the nation an important library of the literature dealing with the subject. His previous gifts have comprised at least 15,000 specimens. Among these may be specially mentioned a collection of insects from California and a series of more than 1,000 moths of the family *Pyralidæ*. Another donation which forms a specially attractive feature of the museum is the collection of British butterflies and moths, in which the caterpillars, at various stages of their growth, are exhibited on their food-plants with the perfect insects. The preparation of the caterpillars for exhibition, an operation requiring a considerable amount of technical skill, was in great part the work of Lord Walsingham himself. The illustrations of the nesting habits of British birds include no fewer than 49 groups obtained and given by Lord Walsingham.

At the University of Montana one of the features of the newly organized work in forestry is a short course for rangers employed in the United States Forest Service. By arrangement with the officers of District No.

1, with headquarters at Missoula, a number of men from each of the national forests in the district will be detailed for attendance on the courses, which will occupy the time of the rangers for the months of January, February and March, while the field work is suspended. About sixty men are expected to register for the courses this winter.

THE U. S. Geological Survey's summary of the mineral production of the United States in 1908, prepared by W. T. Thom, issued as an advance chapter of "Mineral Resources of the United States, Calendar Year 1908," shows a decline in the value of the country's mineral output amounting to about \$476,000,000, or 23 per cent. The figures for 1907 and 1908 are \$2,071,607,964 and \$1,595,670,186, respectively. The loss is due to a decrease in the output of both metallic and non-metallic products. The most notable decreases among the metallic products were in the production of iron ores (30 per cent. in quantity and 38 per cent. in value) and of pig iron (38 per cent. in quantity and 52 per cent. in value). The production of bituminous coal decreased about 16 per cent. Gains are shown in the production of gold and in the quantity of copper produced, but this gain in quantity was accompanied by a loss in total value, due to the lower prices of copper. Petroleum showed a gain of about 8 per cent. in quantity and value, 179,000,000 barrels having been produced in 1908 and 166,000,000 barrels in 1907. Considerable gains in mineral production were made by several states. California gained 15 per cent., Florida 24 per cent., Louisiana 11 per cent., New Hampshire 16 per cent. and South Dakota 72 per cent. The losses, however, were out of proportion to the gains. Alabama lost nearly 33 per cent., Colorado 17 per cent., Illinois 15 per cent., Michigan 34 per cent., Montana 22 per cent., New Jersey 35 per cent., New York 33 per cent., Ohio 35 per cent., Pennsylvania 28 per cent., Virginia 32 per cent. and West Virginia 16 per cent.

THE annual report of the Liverpool Marine Biology Committee and the Port Erin Biological Station was submitted by Professor Herdman at a meeting of the Liverpool Bio-

logical Society on November 12. In the course of his address, according to the report in *Nature*, Professor Herdman gave an account of the work, both scientific and economic, carried out during the past year, such as the curator's report upon the hatching and setting free of more than seven millions of young plaice, making a total of 25½ millions during the six years the hatching has been in operation; the experiments in lobster rearing; Dr. Ward's investigations on the eggs and young larvæ of the plaice (illustrated by many very beautiful enlarged photographs); Mr. Gravely's work on the development of the brittle-star-fish; Dr. Herbert Roaf's researches on digestion in marine animals; Mr. Dakin's physico-chemical observations on the condition of the sea-water at different times in connection with the migrations of the food of fishes; Mr. Edwin Thompson's photomicrographs of various types of minute organisms in the sea; and Professor Herdman's own investigations into the detailed distribution of life in the sea. Some of the biological stations and establishments for fish culture in Canada and the United States were also described, and attention was directed to the American system of providing dormitories and dining halls for the students and researchers, and to the manner in which men of wealth in the states advance science by making large donations to such laboratories in order to defray the expenses of special investigations or marine and other explorations.

THE *Journal* of the American Medical Association summarizes recent vital statistics for England and France. It appears that the registrar-general's return for the quarter ending September again records a decreased birth-rate for England and Wales, the proportion being 25.4 annually, which is 2.5 below the average for the ten corresponding quarters and is the lowest for any third quarter of the year since the establishment of civil registration. On the other hand, the deaths were only 11.6 per 1,000, which was 3.4 below the average for the last ten years, and again the lowest on record for the period in question. Taking the two returns together, the natural

increase in population by excess of births over deaths was 123,878, as against 123,197 in 1908. The low death-rate is all the more remarkable, as the weather conditions have been unfavorable. The summer months included only one substantial spell of fine seasonable weather. Thanks to the great attention which is now being paid to infant hygiene, the mortality of infants under 1 year showed the large decrease of 38.6 per cent. Statistics in regard to the fluctuation of population in France during the first semester of the present year have just been published. Here are the comparative figures of births and deaths for the first semester of the years 1908-9:

	1909	1908
Births	398,710	411,402
Deaths	426,913	401,894

Thus the number of births has diminished by 12,692, and at the same time the number of deaths has increased by 25,019. The population of France has diminished by 28,203, figures representing the excess of deaths over births. Almost all the departments of France have contributed to this diminution of the population, but the excess of deaths over births is often particularly marked in the departments which contain large cities, as the departments of the Seine (Paris), Rhône (Lyons), Gironde (Bordeaux), Bouches-du-Rhône (Marseilles), Haute-Garonne (Toulouse), etc. Only in some departments of the north and west is an excess of births over deaths recorded.

THE production of gold in the United States in 1908 was 4,574,340 fine ounces, valued at \$94,560,000, an increase of 199,513 fine ounces over the production in 1907, which was 4,374,827 fine ounces, valued at \$90,435,700. The production of silver in 1908 was 52,440,800 fine ounces, valued at \$28,050,600, a decrease in quantity and in value from 1907, when the production was 56,514,700 fine ounces, valued at \$37,299,700. On the whole the gold-mining industry had in 1908 a prosperous year in spite of many adverse conditions of trade and finance. The production during the year is the largest annual output

yet recorded. The silver mining industry presents a condition far less satisfactory, owing to the low prices of silver, lead, copper and zinc. Important mines in Colorado and Utah found it difficult to make profits on low-grade ores, and large smelters in these states were closed during part of the year or were operated with reduced capacities. A temporary lack of demand for silver in India, and a very heavy production in Canada contributed to the depression in price. The average price per ounce during the year was 53 cents, as against 66 cents in 1907. The Geological Survey's report on gold and silver in 1908, prepared by Messrs. Waldemar Lindgren and H. D. McCaskey, may be had by applying to the director of the survey at Washington.

ACCORDING to a notice in the London *Times* the project described recently by Sir William Willcocks at a meeting of the Royal Geographical Society promises to be the most important engineering undertaking of the near future. An irrigation scheme is being planned for the rehabilitation of Mesopotamia upon such a scale that 3,000,000 acres of the best land in that country will be provided with water. If it is carried out, the Tigris, the Euphrates and the Akkar Kuf Lake will form part of a controlled system of canals, weirs and barrages, whereby the pernicious silt is to be separated, floods are to be prevented and wheat-bearing land is to be nourished with water. It is estimated that the cultivated area will be doubled, and that the crop of wheat along the Euphrates will be trebled. The scheme would also result in a vast increase in the yield of cotton. Briefly, it consists of providing a means of escape for the flood waters of the Euphrates along the depressions of the Pison, but it also entails the construction of a great central canal, regulators to control the supply from the Euphrates at the head of the Sakhlawia, a weir on the Tigris, a canal for irrigation to the north of Baghdad, another canal along the right bank of the Tigris and the building of a railway along the left bank of this canal for the transport of the harvests. Moreover, the construction work would include a railway to connect

Baghdad with the Mediterranean by a short and cheap route.

UNIVERSITY AND EDUCATIONAL NEWS

THE trustees of the University of Pennsylvania announce that Mr. Henry Phipps, of New York, founder of the Phipps Institute in Philadelphia, has presented to the university \$500,000, to be used in the campaign against tuberculosis. The management of the Phipps Institute will be in the hands of the university, and the study, treatment and prevention of the disease will be continued in a new hospital to be erected at Seventh and Lombard Streets. Six years ago Henry Phipps founded the Phipps Institute for Tuberculosis Research in Philadelphia, with a large endowment. In 1908 he gave \$500,000 to the Johns Hopkins University for the founding of a psychiatric clinic.

THE eleventh industrial fellowship at the University of Kansas has been established by the Pacific Coast Borax Company of Oakland, California, and will be known as the Borax fellowship. The amount which this company will pay to support the work of its fellow is \$750. The purpose of the fellowship is to investigate the uses of borax and to discover if possible new commercial utility in this product.

THE cornerstone of the new science hall of Howard University was recently laid by Richard A. Ballinger, secretary of the interior. Addresses were delivered by Dr. Robert S. Woodward, president of the Carnegie Institution of Washington and Dr. Charles Wardell Stiles, director of the Rockefeller fund for combating the hook-worm disease. An appropriation of \$90,000 was made by the last congress for the erection of this hall.

LECTURES in veterinary science are to be given in the College of Agriculture of the University of Wisconsin this year during the second semester as a result of the appointment of Dr. John Spencer, of Pulaski, Va., as special lecturer in veterinary science. In addition to his lectures Dr. Spencer will have